normal skin or mucous membrane. Mechanical trauma, malnutrition, excess perspiration, etc., predispose to the infection. Mild parasiticides in conjunction with general hygienic care and strict attention to any underlying cause will generally clear up the condition. Thrush of the mucous membrane in children generally responds to cleansing the mouth with a soda bicarbonate solution or painting it with Berwick's dye (one per cent gentian violet and one per cent brilliant green in 50 per cent alcohol). The interdigital erosions on the hands are quite resistant to all therapy. Whitfield's ointment, iodin, roentgen-ray therapy, radium, etc., have been used in these cases. The paronychial lesions respond to the usual therapy used for mycotic infections in these areas. Roentgen-ray therapy, mild parasiticides, and sometimes surgical removal of the nails will result in cure. The intertrigenous areas between the toes, under the breasts, etc., are probably best treated with potassium permanganate (1-5000) or with Berwick's dye. I have also found 10 per cent silver nitrate to be of use in these infections. In general, ointments are contraindicated and I have not found roentgen ray or ultra-violet light to be of value.

SUMMARY

A review of monilia infections of the skin is given and emphasis is placed on the fact that these organisms do not develop on the normal skin or mucous membrane. Irritation due to trauma, excessive perspiration, malnutrition, or metabolic disease may predispose to the infection.

Many of the eruptions previously classified as intertrigenous eczema are due to a monilia infection. Treatment, to be effective, must be directed against the predisposing factors as well as against the monilia organism.

384 Post Street.

THE TUBED PEDICLE FLAP IN RECONSTRUCTION SURGERY*

REPORT OF CASES

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THE development of the tubed pedicle flap by Sir Harold Gillies of London during the late war was a great step forward in reconstruction surgery, and placed in the armamentarium of the reconstruction surgeon a most useful procedure in planning and completing his work.

TECHNIQUE OF TUBE FLAP FORMATION

As is well known, the tubed pedicle flap is constructed as follows: Two parallel incisions are made, the included tissue is raised and sutured in the form of a tube and the raw areas are then closed beneath the tube. This step leads to numerous advantages in the movement of tissue. There is first a freedom from infection, as all raw areas are closed, and also the blood supply through the pedicle is materially increased. When cut through, after a few weeks a central artery can often be demonstrated throughout the tube. Added to these useful facts is the great advantage of a store of full thickness of skin and subcutaneous tissue which may be transferred to any part of the body, thus enlarging the capacity for the repair of large defects. This full thickness of skin and fat is of far more value than are Thiersch or Reverdin grafts, as the ultimate result will be very near the normal in character, appearance, and function.

* Read before the General Surgery Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

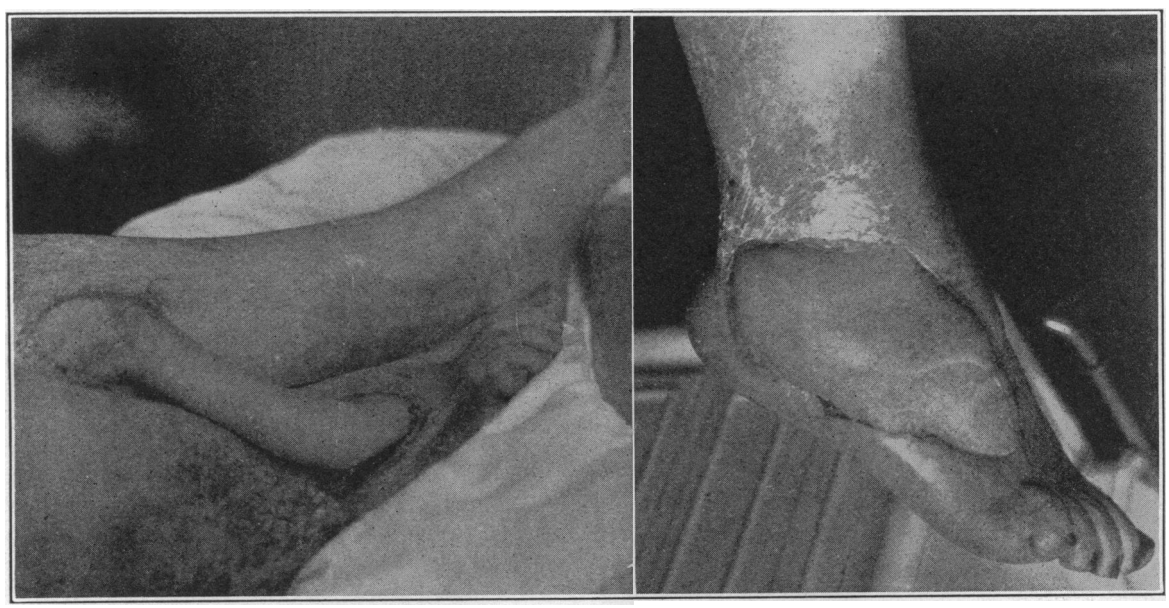

Fig. 1 (a), Case 1.—The tubed pedicle from the abdomen has been transplanted to the thigh of the same side, thence to the calf of the opposite leg, and is here shown transplanted to the injured ankle. Note the heavy scar locking the ankle.

Fig. 1 (b), Case 1.—Shows the tubed pedicle spread out, replacing the scar tissue on the foot.

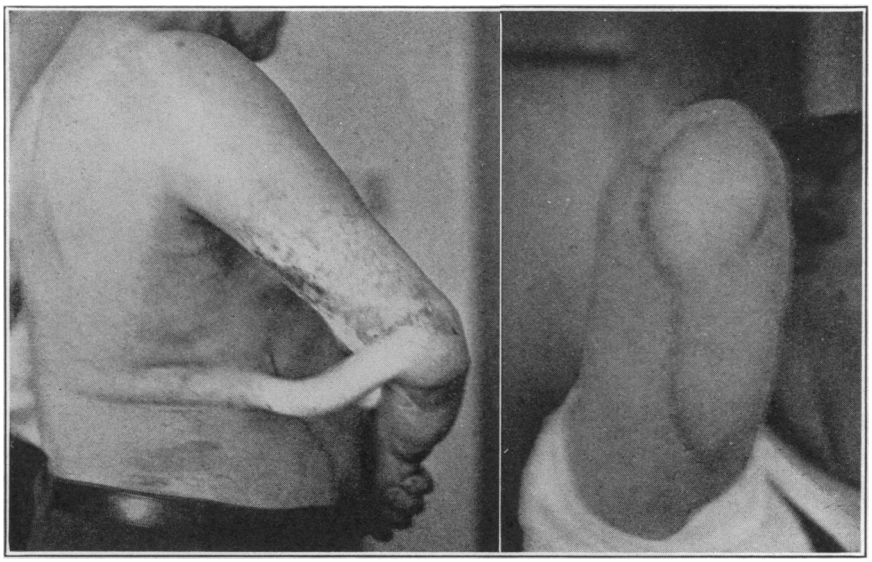

Fig. 2 (a), Case 2.—The tubed pedicle from the abdomen has been transplanted to the elbow, replacing scar tissue in that region.

Fig. 2 (b), Case 2.—The tubed pedicle has been spread out, replacing the scar on the extensor surface of the arm.

This type of pedicle may be constructed in sizes varying from three or four inches in length and three-eighths to one-half inch in diameter to a length of fourteen to sixteen inches and a diameter of two and a half to three inches. They may be used as a simple direct transplant or as a pedicle bearing a larger flap at one extremity. Larger amounts of tissue may be transplanted which are nourished by two, three, or even four tubed pedicles. These flaps may be stepped up end for end at intervals of about three weeks. The number of steps is apparently unlimited and the texture of the skin and underlying tissues shows little change after a series of steps. If any change is evident it is a slight increase in fibrous tissue in the subcutaneous fat. The best source of large tubed flaps is the abdomen or flank, as in this region considerable skin can be removed without distortion or limitation of function.

IMPORTANT CRITERIA

There are several criteria which should be followed in the construction and management of tubed pedicle flaps. In making the tube, usually some of the subcutaneous fat should be removed, but not too much. If too little fat is taken away, the pedicle will be too tight when sutured and the edema resulting from operative trauma will cause a choking of the blood supply. If too much is taken, sufficient blood supply may not remain to support the vitality of the skin. Blood supply may be further guarded by selection of site for the pedicle, keeping in mind the anatomical distribution of the larger subcutaneous vessels. Care should be used in suturing the angles beneath the ends of the pedicles to the underlying suture line, for this is a point of tension where three suture lines meet. The angle beneath the pedicle may be sutured to the straight side of the raw surface beneath, avoiding this point of low vitality. The after-care of pedicles is of the greatest importance. If white, an insufficient arterial supply is indicated, while a cyanosis means a rich arterial supply and incompetent venous return. If uncared for, the former may result in dry gangrene and the latter in moist gangrene. The remedy in each case is proper gentle massage and frequent warm compresses of normal saline solution of 105 degrees Fahrenheit. Greater heat is apt to blister the pedicles and to favor thrombosis. Massage in the first instance should be afferent and in the second, efferent.

ADVANTAGES OF TUBED PEDICLE FLAP

The tubed pedicle flap is of great importance in reconstructive work:

1. Because the possibility of infection is greatly decreased and the scar in the transplanted tissue is minimized.
2. It can be moved with comparative safety to the tissue itself, relatively great distances, and a considerable number of times.
3. The disability and discomfort of the patient is greatly reduced.

The tubed pedicle flap should not be looked on as a panacea for all the difficulties that the plastic surgeon falls heir to, but we do believe that for certain types of reconstruction that we have in it an almost ideal procedure for more perfect and pleasing results.

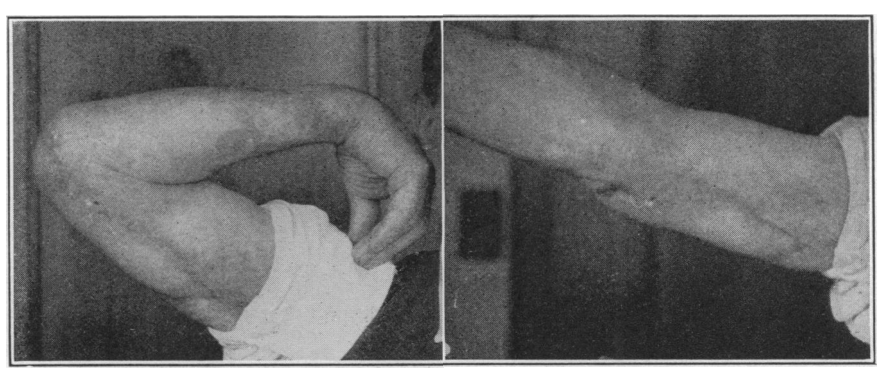

Fig. 2 (c), Case 2.—Flexion of elbow after completion of transplantation.

Fig. 2 (d), Case 2.—Extension of elbow.

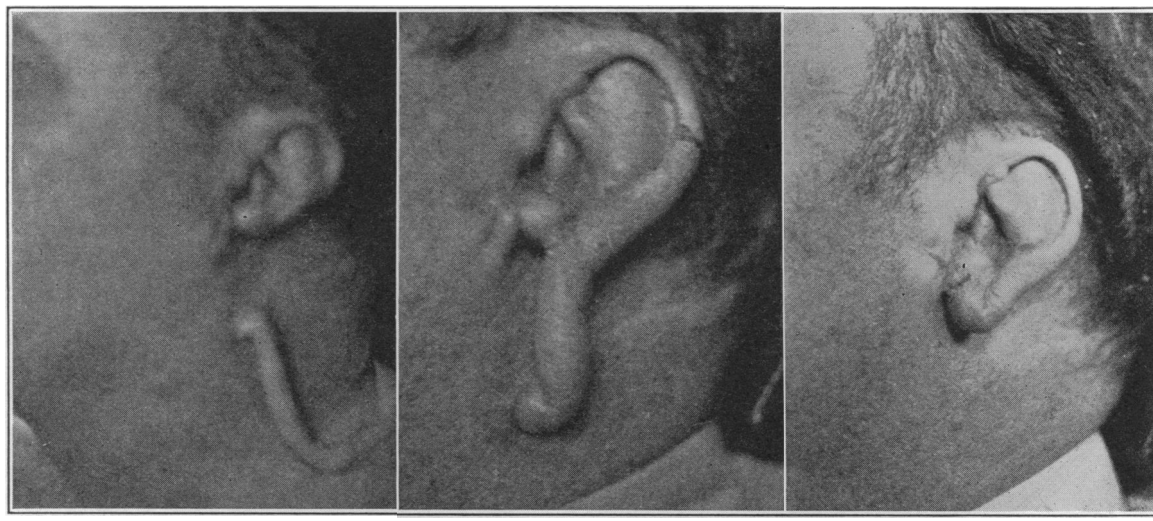

Fig. 3 (a), Case 3.—Loss of half the external ear from accident. Tubed pedicle made parallel to clavicle has been transplanted upward.

Fig. 3 (b), Case 3.—Tubed pedicle has been transplanted to ear.

Fig. 3 (c), Case 3.—The completed auricle. A small line of healing can be seen on the newly formed lobule.

CASE HISTORIES

CASE 1.—This patient was injured May 12, 1926, when he suffered a third-degree burn of the lateral surface of the right foot and ankle. The burn was deep and involved most of the soft tissue of the area affected. Healing was slow and no skin graft was done. He came under my care on October 11, 1928, and presented the following disability: The entire lateral surface of the right ankle and foot was a mass of scar tissue except just anterior to the external malleolus, where was an ulcer four by three centimeters which had never healed since his injury two and a half years before. The foot was held in strong eversion by the contracture of the scar tissue, and what little walking the patient could do with this foot was done on the inner border of the foot. Not more than 10 degrees motion of combined dorsi and plantar flexion was possible in the ankle, and there was no subastragaloid motion. The ulcer had been under constant medical treatment, but seemed to resist all efforts to heal during these two and one-half years. A great variety of chemical agents had been applied to the wound to no avail. There was a moderate edema of the right foot and ankle. There was nothing in the patient's history or physical findings to explain the failure to heal. The man was a vigorous adult weighing 182 pounds and was thirty-three years of age. Wassermann test in the blood was negative. The plan of procedure in this case was to reduce infection in the ulcer as much as possible, skin-graft the ulcer with a Thiersch graft to obtain rapid healing, and then at a later date to replace the scar tissue with full thickness skin and subcutaneous tissue to restore function. Smear and culture from the ulcer had revealed a mixed infection of streptococcus and staphylococcus *Pyogenes aureus*. The patient was put to bed, the leg elevated, and normal saline compresses were applied. No other medication was used. The edema rapidly disappeared and within three or four days epithelialization could be seen progressing. We were more than surprised to see this ulcer completely heal in twenty-two days with this simple nonirritating treatment after it had resisted closure by the use of all the so-called tissue stimulants. This was nothing less than an object lesson that nature should be given every chance to proceed with normal healing without interference, a conclusion which is being reached by a large number of surgeons. A similar experience in a number of cases has convinced us entirely in this matter.

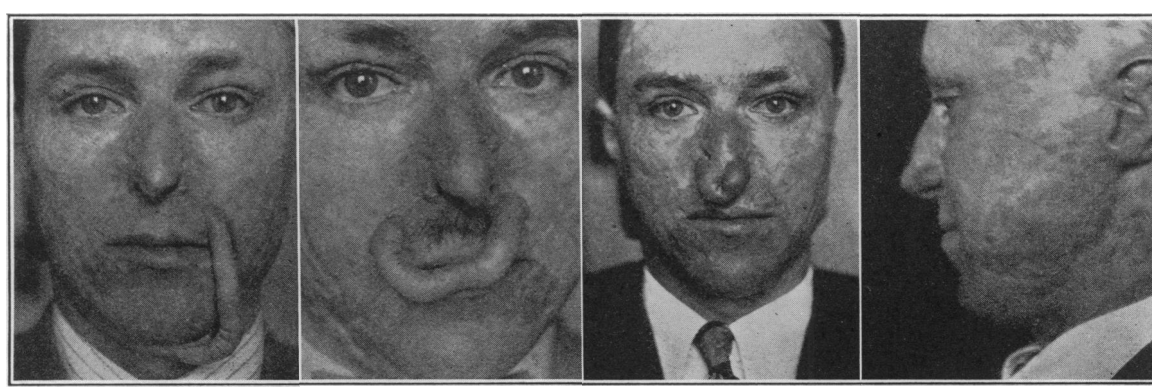

Fig. 4 (a) Fig. 4 (b) Fig. 4 (c) Fig. 4 (d)

Fig. 4 (a), Case 4.—Severe burn of face and nose. Scar over the bridge and sides of the nose has been replaced with Wolfe graft. Tip and alae deficient. A tubed pedicle from the clavicular region has been transplanted to beneath the chin and thence to the cheek.

Fig. 4 (b), Case 4.—Second transplantation of tubed pedicle.

Fig. 4 (c), Case 4.—Third transplantation.

Fig. 4 (d), Case 4.—Final shaping of tubed pedicle to form the tip and alae of the nose.

One month later a large tubed pedicle 12 inches long and 1¾ inches in diameter was made on the lower right abdomen. Three weeks later the flank end of the pedicle was severed from the abdomen and transplanted into the middle of the anterior surface of the right thigh. From thence it was transplanted to the calf of the left leg and then to the right ankle, as shown in Figure 1 (a).

Transplantations were done at intervals of three weeks. In the illustration the scar of the burn can be seen, also the eversion of the foot. The pedicle was finally transplanted entirely to the foot, the scar tissue excised completely and the pedicle spread out and sutured. Healing occurred normally and the patient returned to work two months after the final operation. He walked without limping, and had forty-degree plantar flexion and fifteen-degree dorsi flexion with aproximately one-half of normal subastragaloid motion. The final result is shown in Fig. 1 (b).

CASE 2.—This patient was severely burned in a tunnel explosion and, among other injuries, sustained a deep burn of the extensor surface of the right arm from the elbow to the junction of the upper and middle thirds. The resulting scar limited flexion to 68 degrees, and even partial flexion caused severe pain in the region of the elbow joint. Fig. 2 (a) shows the scar and the first stage of the scar replacement by a tubed pedicle from the right flank. Fig. 2 (b) shows scar entirely replaced by the pedicle, and Fig. 2 (c) and Fig. 2 (d) show the final result with complete return to normal function. There was entire relief from pain.

CASE 3.—This patient was injured when an automobile in which he was riding overturned and he suffered the loss of the left auricle. Repair was done by the use of a small-tubed pedicle from the clavicular region, which admirably supplied the necessary type of tissue. The original condition, together with the first step up of the tubed pedicle, is shown in Fig. 3 (a). The next stage where the pedicle is sutured to the antihelix and blended into the remaining helix is shown in Fig. 3 (b). The final result is shown in Fig. 3 (c). Further uses of the small-tubed pedicle are shown in an article by the author on "Reconstruction of the External Ear," *Surgery, Gynecology and Obstetrics,* March 1930, pages 601-605.

CASE 4.—This patient was injured May 27, 1926, when a supposedly empty 110-gallon sulphuric acid drum exploded while he was cutting it with a torch. Goggles he was wearing protected his eyes, but he received second and third degrees burns of the face, nose, neck, and ears. He also suffered the loss of a leg. Subsequent healing was very slow and resulted in marked scarring of the face, with loss of most of the soft tissue of the nose. The nose was covered with a thin, red, shiny epithelium, and the tip and alae were practically destroyed. The scar over the bridge and sides of the nose was replaced with a Wolfe graft of full thickness skin, and the result of this operation is shown in Fig. 4 (a). Unfortunately the pictures of the original condition were not good, but these illustrations show well the damage to the tip and alae.

The problem of restoring the tip and alae was solved by the use of a Gillies type of tubed pedicle graft in a manner which, I believe, has not been used before. The tubed pedicle was made parallel to the clavicle, then transplanted upward to the nose in various stages as shown in Figs. 4 (b) and 4 (c). It was finally shaped as shown in Fig. 4 (d), giving a close approximation to the normal in contour and appearance.

490 Post Street.

SYPHILIS—THE TREATMENT OF WASSERMANN-FAST AND CEREBROSPINAL BY MODERN METHODS*

By JAMES E. POTTER, M. D.
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WASSERMANN-FAST SYPHILIS.—Paul Ehrlich in 1906[1] reasoned that protozoan diseases could not be treated by specific antitoxins, but must be treated by sterilizing the blood stream of the organisms. Attacking spirochetal diseases from this angle led to the discovery and development of salvarsan in 1910. In the course of his experiments, in treating trypanosomiasis with certain specific dyes, he found that if the dosage were too small to completely sterilize the animal of the parasites a race of trypanosomes could be bred which proved permanently fast or resistant to the effects of the drug. Later experiments[1] proved that the same thing will happen in the course of treating acute syphilis, and thus we have cases which are Wassermann-fast.[13]

INTRAVENOUS BISMUTH

Intravenous bismuth was first introduced by Grenet, Drouin, and Richon[16] in 1922, and has many advantages over preparations for intramuscular injections.

The dangers of its use, according to Ritter and Karrenburger,[17] are: (*a*) shock; (*b*) yellow atrophy of the liver; (*c*) weakened serum reactions. If used with caution, however, no untoward results may be expected.

INTRAVENOUS IODIN

After a thorough search of American literature the only reference to the use of intravenous iodin appears in the *Journal of Experimental Medicine,*[3] March 1930, as follows:

> A new medicine in the treatment of syphilis has entered the field in the form of soluble iodin (Burnham's) for intravenous use. However, it is so new that no authentic data can be given as to its therapeutic value.

M. Biach[4] of Vienna states that syphilitics tolerate iodin practically in all instances, even when given intravenously in large doses. In its distribution in the various tissues, the heart, liver, and spleen contain approximately the same percentage of iodin, while the average content in the blood is about six times as high. More is deposited in the suprarenals and ovaries, but most in the thyroid gland. When iodin is introduced into the system, thyroid function is frequently stimulated.

TRYPARSAMID

Tryparsamid has proven to be one of the most useful drugs in the treatment of neurosyphilis and has a wide range of possibilities. Its im-

* Read before the Butte County Medical Society, Oroville, September 23, 1930 (by invitation), by Lieutenant-Commander James E. Potter, Medical Corps, U. S. Navy.

* Read before the San Francisco County Medical Society, San Francisco, January 6, 1931 (by invitation).